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NATIONAL DAM SAFETY PROGRAM. STONY BROOK DAM NUMBER 14 (NJ-0015--ETC(U)
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RARITAN RIVER BASIN
HONEY BRANCH
MERCER COUNTY
NEW JERSEY

STONY BROOK DAM
NO. 14
NJ 00154

PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

DEPARTMENT OF THE ARMY
Philadelphia District
Corps of Engineers
Philadelphia, Pennsylvania

May. 1979

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REPORT DOCUMENTATION PAGE

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National Dam Safety Program
Stony Brook Dam No. 14
Mercer County, N.J.

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East Orange, N.J. 07019

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18. SUPPLEMENTARY NOTES

Copies are obtainable from National Technical Information Service, Springfield, Virginia, 22151.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Dams
Structural Analysis
Safety
Visual Inspection
National Dam Inspection Act report
Stony Brook Dam No. 14, N.J.

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report cites results of a technical investigation as to the dam's adequacy. The inspection and evaluation of the dam is as prescribed by the National Dam Inspection Act, Public Law 92-367. The technical investigation includes visual inspection, review of available design and construction records, and preliminary structural and hydraulic and hydrologic calculations, as applicable. An assessment of the dam's general condition is included in the report.

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DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
CUSTOM HOUSE – 2 D & CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

IN REPLY REFER TO

NAPEN-D

4 MAY 1979

Honorable Brendan T. Byrne
Governor of New Jersey
Trenton, NJ 08621

Dear Governor Byrne:

Inclosed is the Phase I Inspection Report for Stony Brook Dam No. 14 in Mercer County, New Jersey which has been prepared under authorization of the Dam Inspection Act, Public Law 92-367. A brief assessment of the dam's condition is given in the front of the report.

Based on visual inspection, available records, calculations and past operational performance, Stony Brook Dam No. 14, initially listed as a high hazard potential structure but reduced to a low hazard potential structure as a result of this inspection, is judged to be in good overall condition and the spillway is considered adequate. The low hazard potential classification means that in the event of failure of the dam, no loss of life and only minimal economic loss is expected. Based on the dam's overall condition and low hazard classification, no remedial actions are recommended except the continued monitoring of the backslope seepage conditions.

A copy of the report is being furnished to Mr. Dirk C. Hofman, New Jersey Department of Environmental Protection, the designated State Office contact for this program. Within five days of the date of this letter, a copy will also be sent to Congressman Frank Thompson, Jr. of the Fourth District. Under the provision of the Freedom of Information Act, the inspection report will be subject to release by this office, upon request, five days after the date of this letter.

Additional copies of this report may be obtained from the National Technical Information Services (NTIS), Springfield, Virginia 22161 at a reasonable cost. Please allow four to six weeks from the date of

NAPEN-D
Honorable Brendan T. Byrne

this letter for NTIS to have copies of the report available.

An important aspect of the Dam Safety Program will be the implementation of the recommendations made as a result of the inspection. We accordingly request that we be advised of proposed actions taken by the State to implement our recommendations.

Sincerely,

JAMES G. TON
Colonel, Corps of Engineers
District Engineer

1 Incl
As stated

Copies furnished:
Dirk C. Hofman, P.E., Deputy Director
Division of Water Resources
N. J. Dept. of Environmental Protection
P. O. Box CN029
Trenton, NJ 08625

John O'Dowd, Acting Chief
Bureau of Flood Plain Management
Division of Water Resources
N. J. Dept. of Environmental Protection
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STONY BROOK DAM NO. 14 (NJ00154)

CORPS OF ENGINEERS ASSESSMENT OF GENERAL CONDITIONS

This dam was inspected on 8 December 1978 by Louis Berger and Associates, Inc. under contract to the State of New Jersey. The state, under agreement with the U. S. Army Engineer District, Philadelphia, had this inspection performed in accordance with the National Dam Inspection Act, Public Law 92-367.

Stony Brook Dam No. 14, initially listed as a high hazard potential structure but reduced to a low hazard potential structure as a result of this inspection, is judged to be in good overall condition and the spillway is considered adequate. The low hazard potential classification means that in the event of failure of the dam, no loss of life and only minimal economic loss is expected. Based on the dam's overall condition and low hazard classification, no remedial actions are recommended except the continued monitoring of the backslope seepage conditions.

APPROVED: James G. Ton

JAMES G. TON
Colonel, Corps of Engineers
District Engineer

DATE: 4 May 79

PHASE I REPORT
NATIONAL DAM INSPECTION PROGRAM

Name of Dam Stony Brook Dam Site No. 14 Fed ID #NJ 00154, NJ ID# 556

State Located New Jersey
County Located Mercer
Coordinates Lat. 4020.7 - Long. 7444.8
Stream Honey Branch of Stony Brook
Date of Inspection 8 December 1978

ASSESSMENT OF GENERAL CONDITIONS

Stony Brook Dam No. 14 is assessed as being in a good overall condition and has a sufficient spillway capacity to accommodate the 100 year design flood. It is recommended that its hazard classification be downgraded to low as its overtopping or collapse would not increase the downstream danger of loss of life or property damage. No detrimental findings were uncovered to merit further study. No remedial actions are recommended except the continued monitoring of the backslope seepage conditions.

F. Keith Jolls P.E.
Project Manager

OVERVIEW OF STONY BROOK WATERSHED DAM SITE #14

DECEMBER, 1978

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FIGURES

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PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM
NAME OF DAM: STONY BROOK DAM NO. 14 FED# NJ 00154

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

This report is authorized by the Dam Inspection Act, Public Law 92-367, and has been prepared in accordance with Contract FPM-36 between Louis Berger & Associates, Inc. and the State of New Jersey and its Department of Environmental Protection, Division of Water Resources. The state, in turn, is under agreement with the U.S. Army Engineer District, Philadelphia, to have this inspection performed.

b. Purpose of Inspection

The purpose of this inspection is to evaluate the structural and hydraulic condition of the Stony Brook Watershed No. 14 and appurtenant structures, and to determine if the dam constitutes a hazard to human life or property.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

Stony Brook Watershed Dam No. 14 (a.k.a. Honey Lake) is a curvilinear homogenous earth structure 1,100 feet long with a crest width of 12 feet. The dam has a maximum height of approximately 23 feet and the outflow is accommodated by a 70 foot wide, straight-walled concrete spillway which discharges onto a 17 foot wide stilling apron. The upstream face of the spillway is protected with stone riprap. A gated, 24" RCP provides emergency drawdown capability. The pipe entrance is located near the thalweg of the original water course and exits through the left wingwall of the spillway. The downstream embankment of the dam contains a perforated 6" asbestos cement pipe toe drain.

b. Location

Stony Brook Dam No. 14 is located about 3 miles east of the Borough of Pennington in Hopewell Township, Mercer County, New Jersey. It was constructed across Honey Branch, a tributary of Stony Brook.

c. Size Classification

The maximum height of the dam is 23 feet and the maximum storage is estimated to be 320 acre-feet. Therefore, the dam is in the small size category as defined by the Recommended Guidelines for Safety Inspection of Dams (storage capacity less than 1,000 acre-feet).

d. Hazard Classification

There are two small bridges located a short distance downstream from the dam. The first, 150 feet below the dam, is a small private farm crossing which has a limited hydraulic capacity. The second is the 75 foot span Elm Ridge Road bridge (Mercer County No. 232) about 1,600 feet downstream. The farm crossing could be severely damaged by flood waters should the dam fail, but the newer (1970) County bridge has over 24 feet of freeboard which would be well above flood water. There are no residences, commercial or industrial properties within the flood plain below the dam. Accordingly, it is recommended that this dam be downgraded to a low hazard classification.

e. Ownership

The dam is maintained by the Stony Brook-Millstone Watershed Association, Pennington, New Jersey, under the terms of an agreement with the Mercer County Soil Conservation Service. The Association does not own the reservoir or damsite property which reputedly remains in private hands. The owner(s) could not be located.

f. Purpose of Dam

Stony Brook Watershed Dam No. 14 is used for sediment/storm water retention and for limited

recreational purposes by the private landowners whose properties front upon the lake.

g. Design and Construction History

The dam was designed by the Department of Agriculture Soil Conservation Service and was built in 1964-65 by private contractors in conjunction with the sub-division and residential development of the surrounding property. Detailed as-built plans were available from the SCS for comparison with the original design.

h. Normal Operating Procedures

The dam is maintained and operated by the Watershed Association with assistance from the SCS.

1.3 PERTINENT DATA

a. Drainage Area

The drainage area is 3.53 square miles and consists of open woodland and recent residential development.

b. Discharge at Dam Site

Total spillway capacity at top of dam elevation - 2,930 cfs

c. Elevations (ft. above MSL)

Top of dam - 151.17
Full flood control pool - 149.4 (SCS design)
Recreation pool (spillway crest) - 145.5
Upstream portal invert diversion pipe - 132.8
Downstream portal invert diversion pipe - 132.8
Streambed at centerline of dam - 131±

d. Reservoir

Length of maximum pool - 4,970 feet
Length of flood control pool - 4,640 feet
Length of recreation pool - 4,020 feet

e. Storage (acre-feet)

Recreation pool - 110
Flood control pool - 240
Top of dam - 320

f. Reservoir Surface (acres)

Top dam - 44
Flood-control pool - 38
Recreation pool - 27

g. Dam

Type - Earth dike with straight drop concrete spillway.

Length - 1,100 feet

Height - 23 feet (at spillway)

Top Width - 12 feet

Side Slopes - Upstream 3H:1V
Downstream 2H:1V

Zoning - None

Cutoff - Concrete cutoff wall to bedrock under spillway; Impervious cutoff key under embankment.

h. Diversion and Regulating Tunnel

None

i. Spillway

Type - Reinforced concrete straight drop weir spillway

Length of weir - 70 feet

Crest elevation - 145.5 feet

Gates - None

U/S Channel - 11'± riprap approach

D/S Channel - natural streambed

j. Regulating Outlets

24" gated R.C. pipe drain

SECTION 2 - ENGINEERING DATA

2.1 DESIGN

Complete details of the SCS design report and hydraulic determinations, structural analyses and subsurface information were available at the Soil Conservation Service offices in Somerset. All design was done in accordance with SCS criteria and was discussed with their engineering personnel who recapitulated the design parameters and operational features of the dam. The design of the spillway is straightforward and of a conservative nature for the height of uncontrolled weir. The discharge energy is dissipated on the outfall apron by a 12" high transverse sill built at the lower edge of the apron.

2.2 CONSTRUCTION

The construction closely followed the contract plans, but it is unknown who undertook the supervision. There have been no major structural modifications since the initial construction.

2.3 OPERATION

As the principal purpose of the dam is to reduce urban flooding as well as to establish a recreational area, the multi-purpose operation appears to function satisfactorily. It appears there is little or no regulation of the water level and the dam operates continuously as an uncontrolled overflow weir.

2.4 EVALUATION

a. Availability

Sufficient engineering data was obtained to fully assess the structural stability of the embankment. The foundation stability analysis was delineated in the soils and design reports prepared by the SCS. This dam site lies on the Brunswick formation which is Triassic in age. Bedrock consists of interbedded layers of hard, red, silty shale and siltstone. A 40 to 50 foot band

of soft, black, highly weathered shale is directly below the spillway. The overburden rarely exceeds a thickness of 8 feet and generally consists of 3 to 5 feet of silty alluvium overlying 1 to 3 feet of dense silty gravel. This overlying residual soil was utilized as the compacted fill throughout the dam embankment. However, the drain filter material and the riprap were imported from nearby quarries. Seepage along the surface of the underlying bedrock was minimized by leaving 12" of the residual silty gravel (GM) material over the bedrock and compacting it. Stability analyses of the SCS indicated that the upstream slope of the embankment has a safety factor of 1.5 (with full drawdown considered) while the downstream slope has a safety factor of 2.1.

b. Adequacy

The field inspection and review of the available design plans reveal that the dam is structurally sound and well-built. It is believed that the data available is adequate to render this assessment without recourse to gathering additional information.

c. Validity

The validity of the engineering data available is not challenged and is accepted without recourse to further investigations.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of Stony Brook Dam No. 14 was conducted on December 8 and 26, 1978. Weather conditions at the time of the inspection were inclement. The overall appearance of the dam and appurtenant structures was satisfactory with water level in the lake at the time of the inspection at normal pool elevation 145.5 and the tailwater at elevation 133+. The land surrounding the lake is almost completely residential and the region immediately downstream is essentially wooded and undeveloped.

b. Dam

The dam is in good condition with a uniform vertical and horizontal alignment. A thick grass stand is well established on the embankment slopes and only a few small animal burrows and hoofprints mar the surface. Only minor erosion was noted on the embankment. Conversely, the embankment cover is rooting itself on the shallow riprap-covered approach channel to the spillway. This is beginning to slightly constrict the spillway discharge, but spring storms will probably clean the channel. While the left embankment toe is dry, the area adjoining the right embankment toe is wet with very spongy earth and marsh-type vegetation. This area is traversed by a small stream which originates above the right abutment and flows parallel to the face of the dam, entering the discharge channel at the foot of the right wingwall of the spillway. It could not be determined if the wet condition is the result of seepage through the dam or whether it may be solely attributed to the small stream. The natural thalweg predates the dam construction

and crossed the area underlying the right embankment. The design plans directed that the channel deposits be removed and the undercut area be backfilled with impervious material.

c. Appurtenant Structures

The reinforced concrete spillway appears to be in a satisfactory condition although some superficial spalling was noted on the upper surfaces of the wingwalls. The left and right headwall extensions along the dam axis are slightly offset (½ inch) in a downstream direction at the vertical construction joints. Also, both wingwalls are offset in a downstream direction about 3/4 of an inch (relative to the sidewalls). However, no serious structural cracking was noted. The stilling apron is constantly under water and not visible during the inspection. However, the face and crest of the weir as well as the buttresses appeared to be in a satisfactory condition. The gate and stem for the 24" RCP drain is in good condition, but the stem wheel is missing. The plans indicate the pipe originates in the upstream thalweg of the original stream (beyond the upstream toe), passes through the left headwall, makes a 90° turn to the right and exits through the left sidewall. An Armco steel sluice gate is mounted on the wingwall. (See appended plans).

d. Reservoir

The reservoir is surrounded by gently sloping lawns and wooded terrain and has undergone a period of extensive residential terracing and landscaping. The shoreline is almost completely surrounded by private homes. All appear to be situated well above the dam crest elevation.

e. Downstream Channel

The spillway discharges onto the concrete stilling basin. The channel immediately below the spillway is cleared and regraded to its full

width and narrows from approximately 110 feet at the wingwalls to about 20 feet just above the small farm bridge which crosses the brook about 150 feet downstream. The bridge opening is approximately 6.5 feet by 20 feet and would present a slight constriction to heavy flows over the spillway. The area between the spillway and bridge is heavily silted and overgrown with brush. Below the bridge, Honey Branch flows through an undeveloped woodland area before passing under Elm Ridge Road to its confluence with Stony Brook (at the upstream end of another lake created by a dam just west of Carter Road).

SECTION 4 - OPERATIONAL PROCEDURES

4.1 PROCEDURES

Operational procedures were discussed with personnel of the Stony Brook-Millstone Watershed Association who conduct the maintenance under an agreement with the Mercer County Soil Conservation District. The only regulatory feature is the sluice gate on the 24" RCP drain. The gate has not been opened for at least six years. At the present time, there are no formalized operational procedures but the dam is inspected annually by the SCS who make recommendations for its upkeep to the Watershed Association.

4.2 MAINTENANCE OF DAM

At present, routine maintenance is limited to groundskeeping, mowing and rodent control. In addition, the lake is periodically treated with lime to raise the pH level (as suggested by the Soil Conservation Service). No major repairs have been required since the dam's installation.

4.3 MAINTENANCE OF OPERATING FACILITIES

There are no formalized maintenance procedures for care of the 24-inch gate but the stem and slide mechanism appear to be in satisfactory condition.

4.4 DESCRIPTION OF WARNING SYSTEM IN EFFECT

There is no formal warning system for monitoring or inspecting the dam during or after heavy storms.

4.5 EVALUATION

While the dam appeared to be adequately maintained, it is believed a regular monitoring program could be developed to augment the annual inspection. Records of any inspections of the dam after unusually heavy storms should be maintained.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 EVALUATION OF FEATURES

a. Design Data

Based on the criteria in the Recommended Guidelines for Safety Inspection of Dams, the 100-year frequency event was selected as the design storm by the inspecting engineer. Precipitation data was obtained from Technical Paper 40 and NOAA TM NWS Hydro 35. Storage data and time of concentration were obtained from the Soil Conservation Service design calculations and reviewed in the context of the recommended inspection criteria. Inflow to the reservoir for the design storm was computed utilizing the HEC-1 computer program. This gave a peak inflow into the reservoir of 3,410 cfs with subsequent routing through the reservoir reducing the peak to 2,810 cfs. The spillway has a maximum discharge capacity of approximately 2,930 cfs before overtopping occurs and can therefore accommodate the design flood.

b. Experience Data

The dam was originally designed for a 100-year frequency storm using a time of concentration of 2.5 hours. With the SCS design peak flow of 1,992 cfs, the dam afforded a freeboard of 1'-9". The crest height was established at the flood crest (plus 1") for a 6 hour point rainfall of 7.8 inches, utilizing SCS design procedures.

c. Visual Observations

With the water at low stage at the time of inspection, approximately 5 cfs was flowing over the spillway. As previously stated,

there is a small amount of debris and root systems blocking the entrance, but it is felt this will be purged by the spring storms. Visual observations confirmed all the aspects and assumptions of the original design.

d. Overtopping Potential

There are no records of the dam having been overtopped and the main and auxiliary spillway can accommodate the design flood.

e. Drawdown Potential

Using the 24" sluice gate at the bottom of the spillway apron (at El. +132.8), it would take approximately one day to draw the reservoir down.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

In view of the relative newness of the dam embankment, the well-designed and apparently well-supervised construction and the continuous maintenance, the dam is deemed to be in a good to excellent condition. The upper zones of the embankment show little evidence of subgrade subsidence and the fill slopes are at true design grade. The inspection team noted the continual high natural water table and apparent foundation seepage below the downstream toe. However, the toe drains appear to be functioning satisfactorily. Nothing was visually noted to create or worsen present conditions that cannot be readily maintained or corrected.

b. Design and Construction Data

From the review of the soils report recommendations and contract plans for the initial construction, the design is well-engineered, reflects a conservative approach, and employs conventional analytical techniques. Based upon the physical condition of the dam and the hazard classification, it is believed that additional design studies relating to safety inspections are unnecessary.

c. Operating Records

The performance of this structure has been satisfactory since its completion. However, there were no formal operating records available.

d. Post Construction Changes

There have been no major modifications since the initial construction that affect the overall structural integrity of the dam.

e. Seismic Stability

The dam is located in Seismic Zone 1 and has negligible potential vulnerability to seismic loadings. Experience indicates that dams in Zone 1 will have adequate stability under dynamic loading conditions if stable under static loading conditions.

SECTION 7 - ASSESSMENTS/RECOMMENDATIONS/ REMEDIAL ACTIONS

7.1 DAM ASSESSMENT

a. Safety

Subject to the inherent limitations of the Phase I visual inspection, Stony Brook Dam No. 14 is judged to be in a good to excellent structural condition. Serious overtopping of the dam is a remote possibility and no detrimental conditions were observed. The appended computations shown that the spillway can accommodate the 100 year frequency design flood. The dam is recommended to be placed in a low hazard category due to the minimal downstream hazards.

b. Adequacy of Information

The information made available by the Soil Conservation Service is deemed to be adequate regarding the analyses and evaluation of safe operation and structural stability.

c. Urgency

No immediate urgency is attached to the recommended actions set forth below.

d. Necessity for Further Study

In view of the overall condition of this dam, additional inspections under the purview of P.L. 92-367 are deemed to be unnecessary. The Stony Brook Millstone Watershed Association, in conjunction with SCS engineers, maintains a system of annual inspections which is felt to be adequate.

7.2 RECOMMENDATIONS/REMEDIAL MEASURES

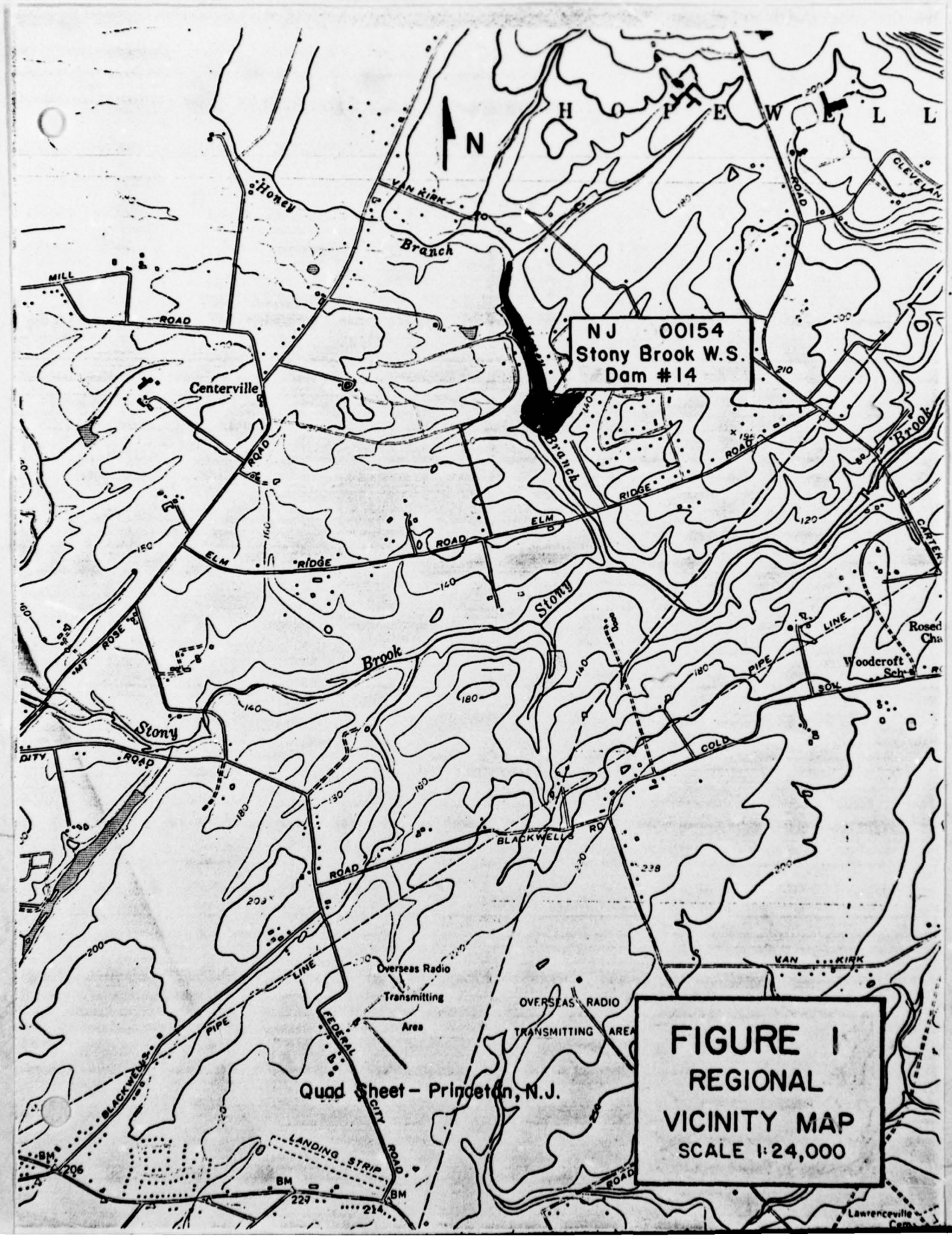
a. Recommended Actions

Under the present maintenance program, it is recommended that the Watershed Association

continue to monitor the backslope seepage and the subgrade drains.

b. O&M Maintenance and Procedures

In view of the assessment contained herein, no additional procedures other than those presently in effect appear to be required.


N
H O P E W E L L
NJ 00154
Stony Brook W.S.
Dam #14
Honey Branch
Van Kirk
Mill Road
Centerville
Ridge Road
Elm Ridge Road
Mt Rose
Stony Brook
Stony Brook
Blackwells Rd
Van Kirk
Overseas Radio Transmitting Area
OVERSEAS RADIO TRANSMITTING AREA
Federal City Road
Landing Strip
Pipe Line
Cold Pipe Line
Woodcroft Sch
Quad Sheet – Princeton, N.J.
FIGURE 1
REGIONAL
VICINITY MAP
SCALE 1:24,000

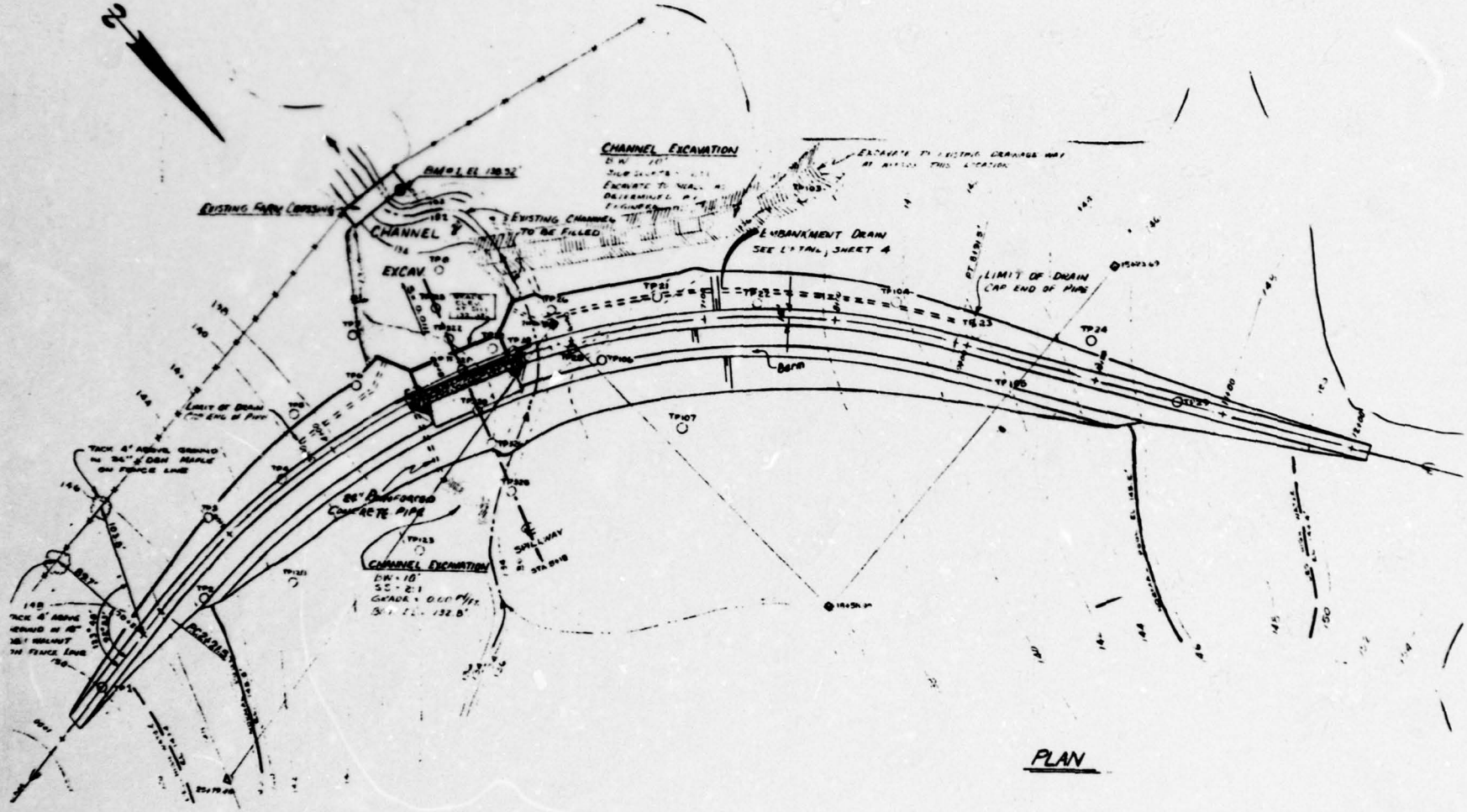
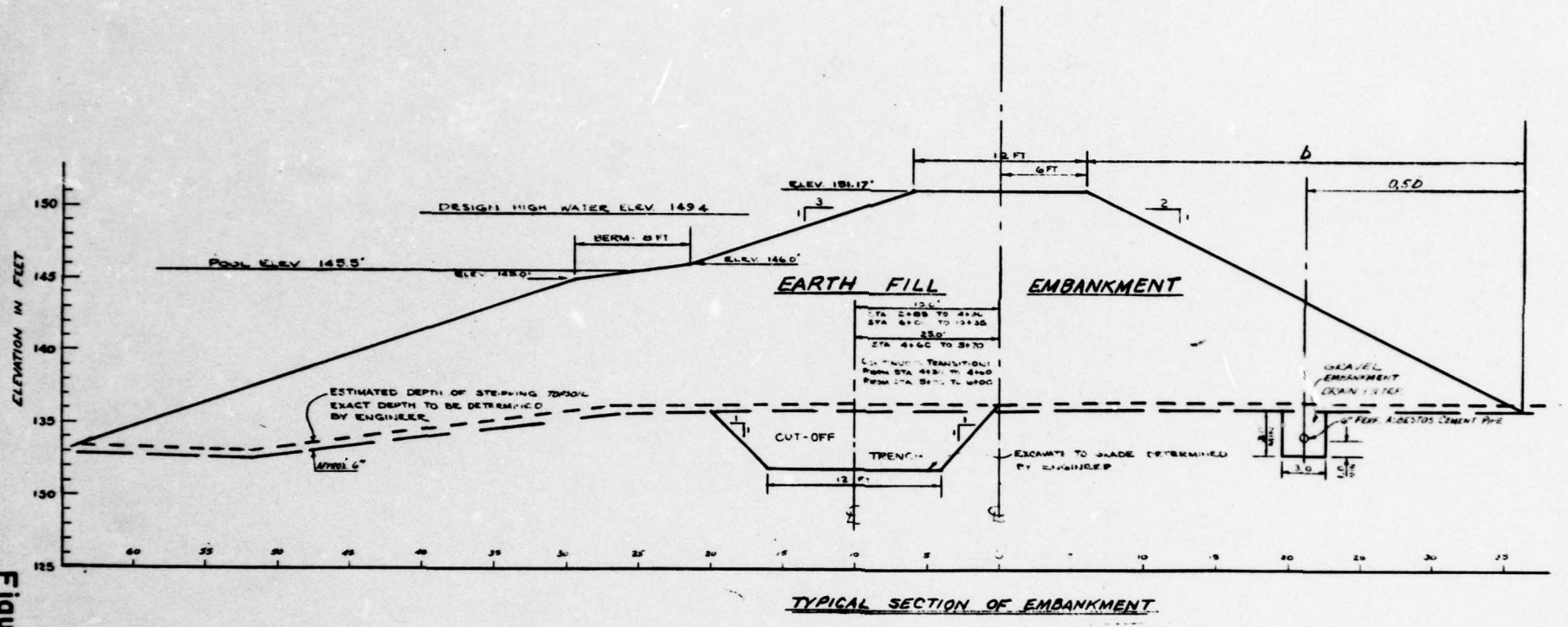
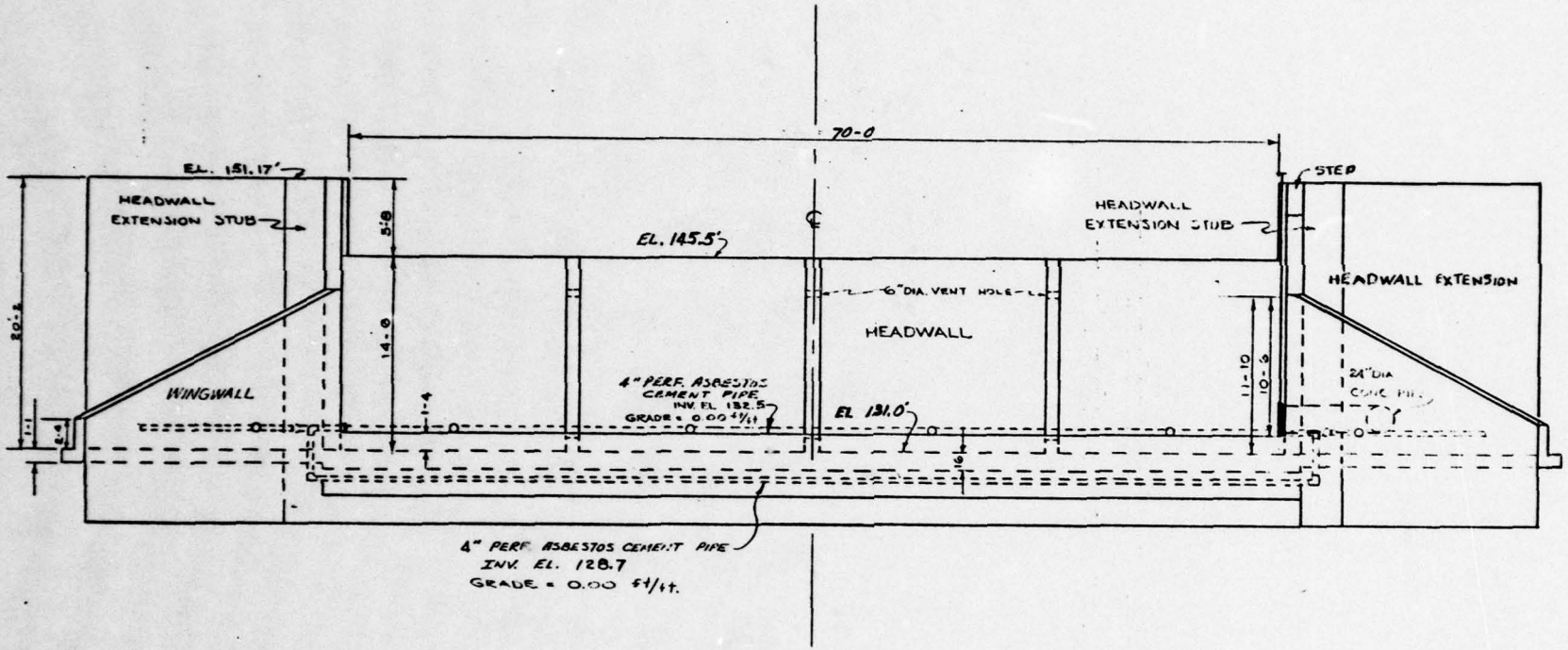

CHANNEL EXCAVATION
EXISTING FARM CROSSING
EXISTING CHANNEL TO BE FILLED
CHANNEL 'A'
EXCAV
EMBANKMENT DRAIN
SEE DETAIL, SHEET 4
LIMIT OF DRAIN
CAP END OF PIPE
84" PERFORATED CONCRETE PIPE
CHANNEL EXCAVATION
SPILLWAY
PLAN

Figure 2



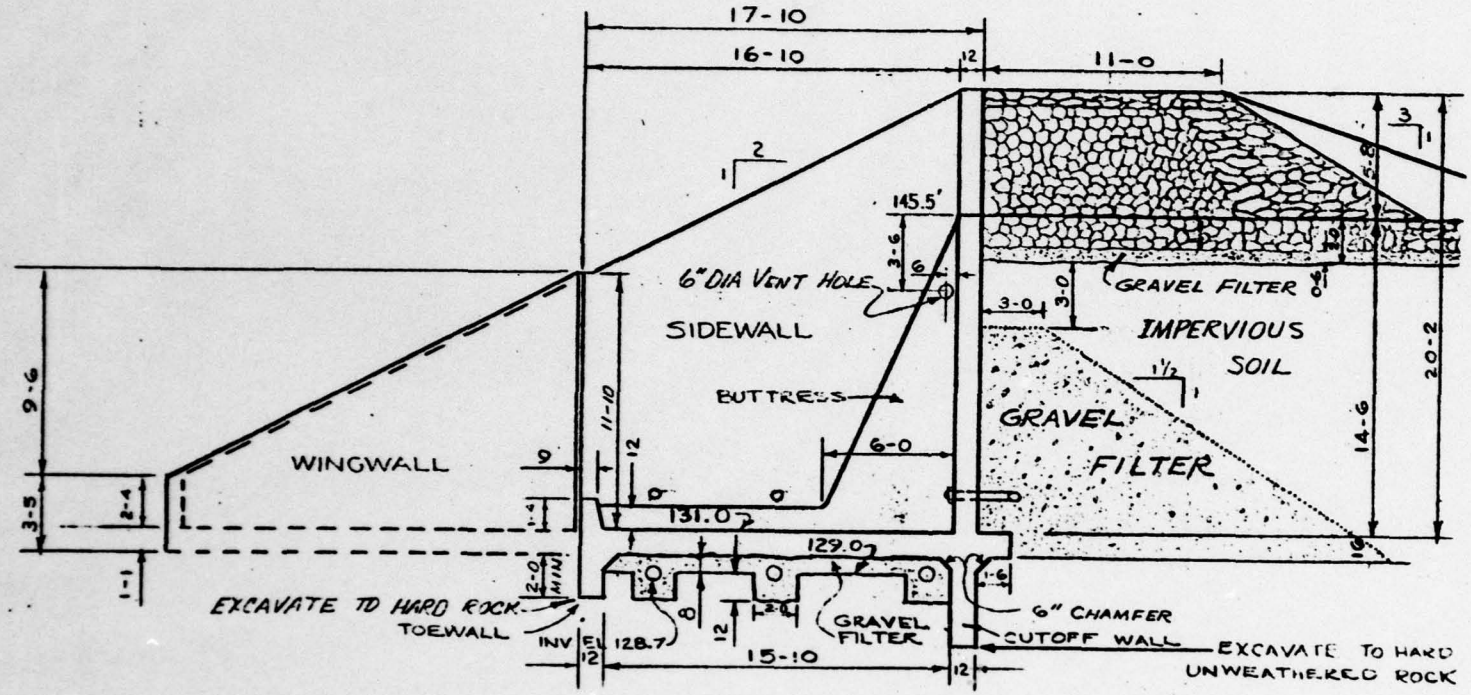
TYPICAL SECTION OF EMBANKMENT

Figure 3



DOWNSTREAM ELEVATION

Figure 4



ELEVATION ALONG ℄

Figure 5

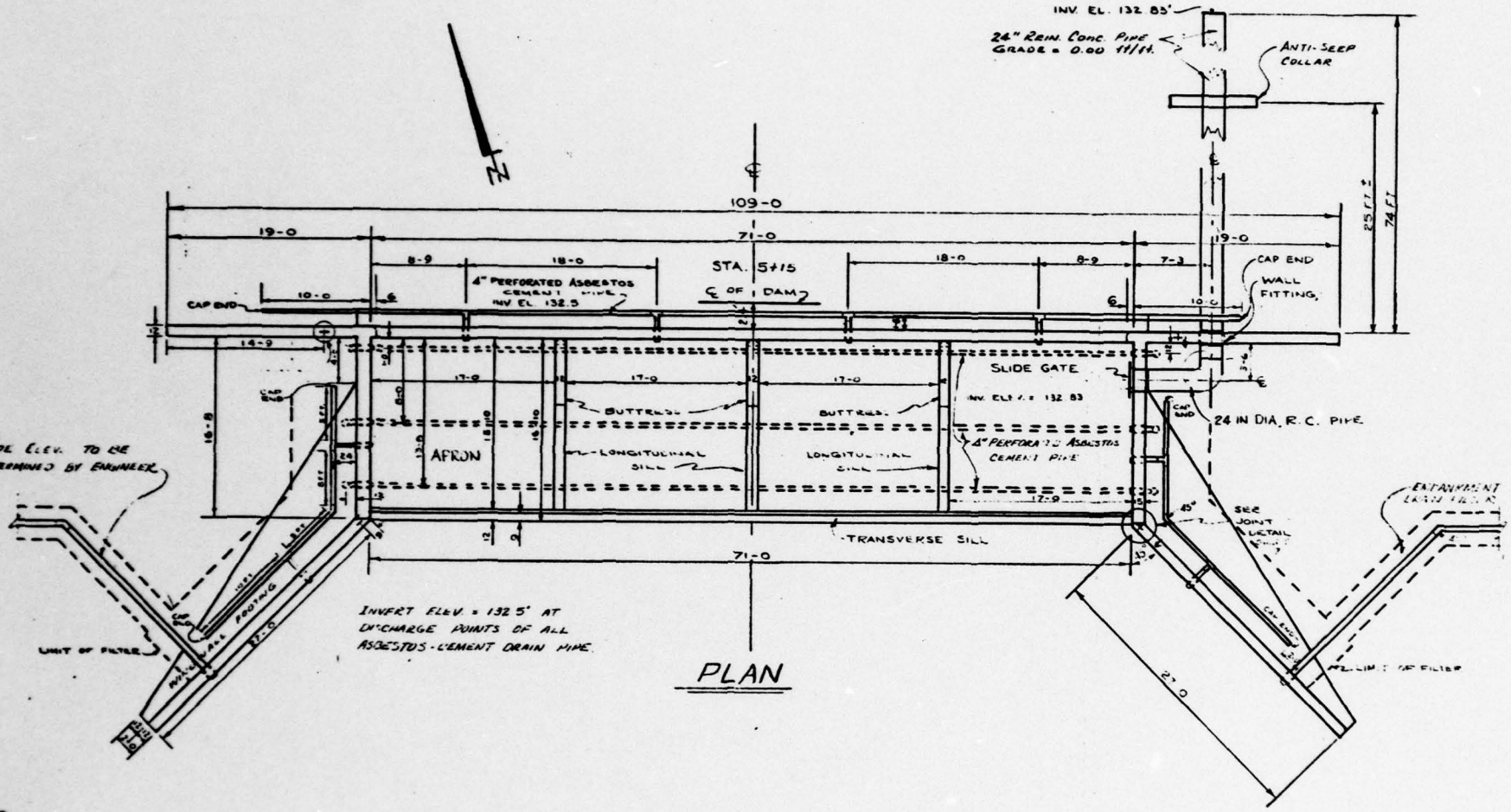

INV. EL. 132.85'
24" REIN. CONC. PIPE GRADE = 0.00 11/11.
ANTI-SEEP COLLAR
N
℄
109-0
71-0
19-0
8-9
18-0
STA. 5+15
℄ OF DAM
4" PERFORATED ASBESTOS CEMENT PIPE INV EL 132.5
CAP END
WALL FITTING
10-0
14-9
17-0
SLIDE GATE
INV. ELEV. = 132.83
BUTTRESS
LONGITUDINAL SILL
APRON
24 IN DIA. R.C. PIPE
4" PERFORATED ASBESTOS CEMENT PIPE
PIPE ELEV. TO BE DETERMINED BY ENGINEER
TRANSVERSE SILL
45°
SEE JOINT DETAIL
ENTRANCE
LIMIT OF FILTER
INVERT ELEV. = 132.5' AT DISCHARGE POINTS OF ALL ASBESTOS-CEMENT DRAIN PIPE
PLAN

Figure 6

Check List
Visual Inspection
Phase 1

Name Dam Stony Brook Dam No. 14 County Mercer State New Jersey Coordinators NJDEP

Date(s) Inspection 12/8/78 Weather Intermittent rain Temperature 45°

Pool Elevation at Time of Inspection 145.5 M.S.L. Tailwater at Time of Inspection 133± M.S.L.

Inspection Personnel:

T. Chapter	K. Jolls	
C. Chhut		
E. Simone		

C. Chhut Recorder

Dam No. 00154

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	None observed.	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	None observed.	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	Grassed slopes were slightly eroded by horse tracks on embankments.	
VERTICAL AND HORIZONTAL ALINEMENT OF THE CREST	Good	
RIPRAP FAILURES	None observed - riprap on approach channel and top of spillway are under water.	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
Downstream Toe	Small stream parallel to face of dam on right side. Swampy growth along toe indicative of a perennial condition. Growth between stream channel and right embankment.	± ½ cfs of flow. Water at ground surface over an extensive area.
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Grass and bushes growing on sloughed material behind both spillway abutments.	Bushes should be cleared.
ANY NOTICEABLE SEEPAGE	Ground damp along toe of right embankment, however this could be caused by the existence of the stream.	Right embankment built across a stream channel which was diverted along the face of the dam. Old stream bed deposits may be acting as a conduit under the dam. Plans indicate removal.
STAFF GAGE AND RECORDER	None	
DRAINS	6" perf. asphalt coated pipe laid in filter bed under toe of dam. 4" perf. ACCMP under apron and through base of spillway to reduce uplift and overturning pressures.	

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	None observed	
INTAKE STRUCTURE	Open ended 24" diameter RCP with 40' long submarine channel excavated from thalweg to pipe. Entrance at invert is 132.8 M.S.L.	Armco vertical lift slide gate at outfall end. Fastened to wingwall face.
OUTLET STRUCTURE	None	
OUTLET CHANNEL	Discharges into concrete stilling basin.	
EMERGENCY GATE	Located in left side of spillway. Grate is stem operated, but wheel is missing.	

UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	Left retaining wall offset ½" downstream relative to spillway structure at construction joint. Right retaining wall offset 3/8" downstream relative to spillway structure. Both wingwalls offset 3/4" toward channel at construction joints with side walls.	No differential settlement observed. Only lateral movement noted.
APPROACH CHANNEL	Grass and brush is encroaching on the riprap approach channel: (see photo) This encroachment is gradually reducing the capacity and effectiveness of the spillway.	Brush should be cleared and grass uprooted.
DISCHARGE CHANNEL	Concrete stilling basin with a 1.3' high transverse sill at the end of the apron basin approximately 17 feet long. Below basin the rubble strewn channel has been graded to its confluence with the original channel 110' downstream.	
BRIDGE AND PIERS	Farm bridge crosses channel about 150' downstream from spillway. Opening under bridge is 6.5'x20'.	Bridge causes a severe constriction and causes high tailwater at stilling basin during peak flows.

GATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE SILL	N/A	
APPROACH CHANNEL	N/A	
DISCHARGE CHANNEL	N/A	
BRIDGE AND PIERS	N/A	
GATES AND OPERATION EQUIPMENT	24" diameter RCP at invert 132.8 MSL. Discharges through left retaining wall of spillway.	

INSTRUMENTATION

VISUAL EXAMINATION	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	None observed	Control benchmarchs are indicated on contract plans.
OBSERVATION WELLS	None	
WEIRS	None	
PIEZOMETERS	None	
OTHER	None	

RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Relatively flat on all sides. Homes built right at water's edge on right shoreline. Wooded area to north. Residences on left bank built further back from lake.	High probability of flooding basements of homes on right shore during periods of elevated lake levels.
SEDIMENTATION	Some silting around upstream side of spillway. This sedimentation is anchored by vegetation.	

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	Farm bridge 150 feet below spillway is severe channel constriction. Channel below bridge is a relatively narrow natural watercourse.	
SLOPES	Side channel slopes graded to 2H:1V to bridge.	
APPROXIMATE NO. OF HOMES AND POPULATION	No homes in flood plain between Site 14 and Carter Road. Channel crossed by Elm Ridge Road Bridge about 1600' downstream from dam.	Carter Road is about 1.75 miles downstream.

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION

ITEM	REMARKS
PLAN OF DAM	U.S. Department of Agriculture Soil Conservation Service (SCS) Somerset, New Jersey
REGIONAL VICINITY MAP	U.S. Department of Interior Geological Survey
CONSTRUCTION HISTORY	Available from SCS
TYPICAL SECTIONS OF DAM	Available from SCS
HYDROLOGIC/HYDRAULIC DATA	Available from SCS
OUTLETS - PLAN	Available from SCS
- DETAILS	Available from SCS
-CONSTRAINTS	Available from SCS
-DISCHARGE RATINGS	Available from SCS
RAINFALL/RESERVOIR RECORDS	Not Available

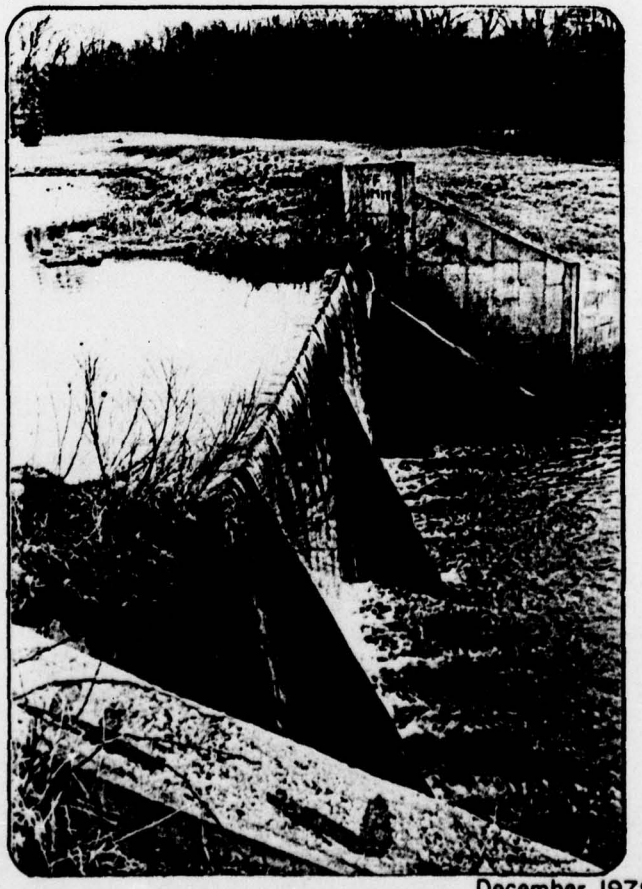
ITEM	REMARKS
DESIGN REPORTS	U.S. Department of Agriculture Soil Conservation Service (SCS) Somerset, New Jersey.
GEOLOGY REPORTS	Available from SCS
DESIGN COMPUTATIONS	Available from SCS
HYDROLOGY & HYDRAULICS	Available from SCS
DAM STABILITY	Available from SCS
SEEPAGE STUDIES	Available from SCS
MATERIALS INVESTIGATIONS	Available from SCS
BORING RECORDS	Available from SCS
LABORATORY	Available from SCS
FIELD	Available from SCS
POST-CONSTRUCTION SURVEYS OF DAM	None
BORROW SOURCES	Available from SCS

ITEM	REMARKS
MONITORING SYSTEMS	None observed
MODIFICATIONS	None
HIGH POOL RECORDS	No record
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	None performed
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	None
MAINTENANCE OPERATION RECORDS	None recorded

ITEM	REMARKS
SPILLWAY PLAN	Available from Soil Conservation Service, Somerset, New Jersey.
SECTIONS	Available from SCS
DETAILS	Available from SCS
OPERATING EQUIPMENT PLANS & DETAILS	Available from SCS

December, 1978

Downstream view of spillway structure



December, 1978

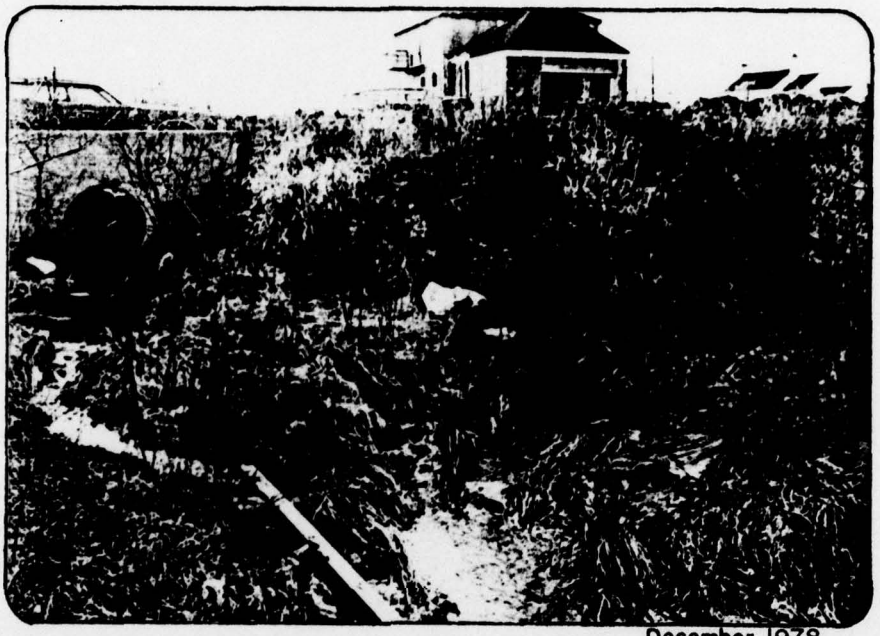
View of spillway structure

December, 1978

View of left embankment

December, 1978

View downstream



December, 1978

Origin of stream

December, 1978

Stream at toe of dam

Dam No. 00154

CHECK LIST
HYDROLOGIC AND HYDRAULIC DATA
ENGINEERING DATA

DRAINAGE AREA CHARACTERISTICS: 3.53 sq.miles

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): Elev. 145.5 M.S.L. (110 acre-feet)

ELEVATION TOP FLOOD CONTROL POOL (STORAGE CAPACITY): 149.4 M.S.L. (240 acre-feet) (SCS design elev.)

ELEVATION MAXIMUM DESIGN POOL: Elev. 149.4

ELEVATION TOP DAM: Elev. 151.17 (320 acre-feet)

CREST:

a. Elevation +145.5
b. Type Reinforced concrete straight drop spillway w/buttresses
c. Width 12 feet
d. Length 70 feet
e. Location Spillover Centerline at Station 5+15
f. Number and Type of Gates None

OUTLET WORKS:

a. Type 24" diameter RCP (gated)
b. Location Left retaining wall of spillway
c. Entrance inverts +132.8
d. Exit inverts +132.8
e. Emergency draindown facilities

HYDROMETEOROLOGICAL GAGES: None
a. Type
b. Location
c. Records

MAXIMUM NON-DAMAGING DISCHARGE: 2930 CFS

BY D.J.M. DATE 2-79 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A1 OF

CHKD. BY DATE STONY BROOK #14 DAM INSPECTION PROJECT C.227

SUBJECT

Time of concentration as computed by S.C.S.

Time of concentration = Tc

(1) Description of course of runoff water	(2) Slope of course (%)	(3) length (l) of course (ft)	(4) velocity of runoff water (v) (ft/sec)	(5) time (sec) = (3) ÷ (4)
permanent hay overland flow	10	600	2.2	273
" " "	4	300	1.5	200
" " "	11	200	2.2	91
REACH A - CHANNEL	2.5	1000	4.9	204
REACH B - CHANNEL	0.9	1200	1.02	1176
REACH C - CHANNEL	0.9	500	2.6	192
REACH D - CHANNEL	1.2	300	5.5	55
REACH E - CHANNEL	1.2	500	2.6	192
REACH F - CHANNEL	0.4	2600	1.5	1733
REACH G - CHANNEL	0.55	2500	1.3	1923
REACH H - CHANNEL	0.4	2900	1.4	2071
NORMAL WATER				

Sum 8110

Roads & Bridges

$$Tc = \frac{8110}{3600} = 2.25 \text{ hrs} + 0.25 = \underline{2.5 \text{ hours}}$$

$$\therefore Tp = \frac{0.5}{2} + 0.6 \times 2.5 = 1.75$$

$$Qp = \frac{484 \times 3.53 \times 1}{1.75} \approx 976 \text{ cfs}$$

BY D.J.M DATE 2-79
CHKD. BY ____ DATE ____
SUBJECT ____

LOUIS BERGER & ASSOCIATES INC.
STONY BROOK 14 DAM INSPECTION

SHEET NO. A2 OF
PROJECT C227

T hrs	T/Tp	Dimensionless Ordinate = Q/Qp (D.O)	Qp x (D.O) = Q cfs
0.5	0.29	0.15	146
1.0	0.57	0.54	527
1.5	0.86	0.93	908
2.0	1.14	0.95	927
2.5	1.43	0.72	703
3.0	1.71	0.48	468
3.5	2.00	0.32	312
4.0	2.29	0.21	205
4.5	2.57	0.13	127
5.0	2.86	0.09	88
5.5	3.14	0.064	62
6.0	3.43	0.041	40
6.5	3.71	0.028	27
7.0	4.00	0.018	18
7.5	4.29	0.012	12
8.0	4.57	0.008	8
			Σ 4578

check unitgraph

$$\frac{4578 \times 12 \times 3600}{2 \times 3.53 \times 5280^2} = 1.0048$$

≈ 1 inch over the area so O.K

BY D. J. M. DATE 2-79 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A3 OF
CHKD. BY ____ DATE ____ STONY BROOK 14 DAM INSPECTION PROJECT C227
SUBJECT ____

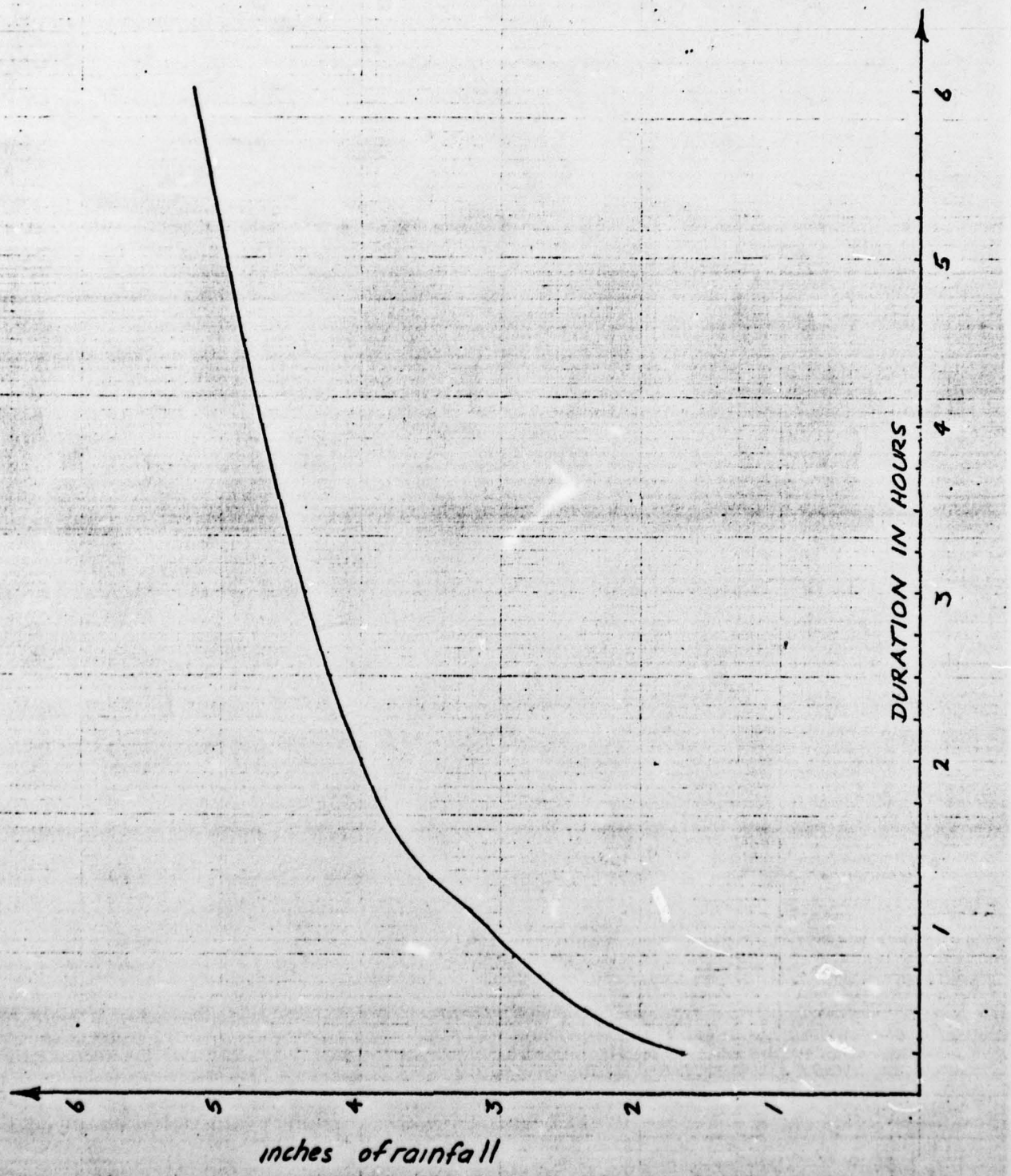
Precipitation data from T.P. 40 & NOAA Technical Memorandum NWS HYDRO-35

Time	Precipitation	Δ	Rearrange
0.50	2.40	2.40	0.12
1.00	3.10	0.70	0.12
1.50	3.70	0.60	0.14
2.00	4.00	0.30	0.17
2.50	4.22	0.22	0.18
3.00	4.40	0.18	0.22
3.50	4.57	0.17	0.70
4.00	4.71	0.14	2.40
4.50	4.84	0.13	0.60
5.00	4.96	0.12	0.30
6.50	5.08	0.12	0.13
6.00	5.20	0.12	0.12

BY D.J.M DATE 1-79 SUBJECT SHEET NO. A4 OF

CHKD. BY DATE DEPTH DURATION CURVE JOB NO. C227

T.P 40 & NOAA Technical Memorandum NWS HYDRO-35



BY D.J.M. DATE 2-79 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A5 OF

CHKD. BY ____ DATE ____ STONYBROOK 14 DAM INSPECTION PROJECT C227

SUBJECT Spillway Discharge Capacity

flow over crest

$L = 70'$

H	C	Q
1	3.1	217
2	3.1	614
3	3.1	1128
4	3.1	1736
5	3.1	2426
5.67	3.1	2930
6	3.1	3189
7	3.1	4019
8	3.1	4910

flow through 24" diameter RCP neglected for spillway discharge calculations.

Tailwater checked by S.C.S and found to have no effect on spillway discharge

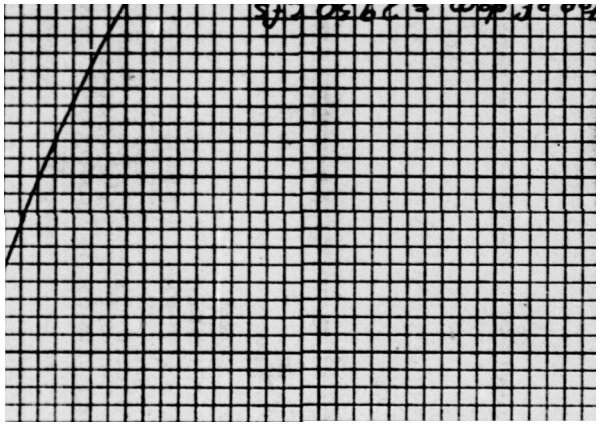
flow over dam

$L = 1030$

H	C	Q
0.33	2.7	527
1.33	2.7	4266
2.33	2.7	9891

ΣQ

Elev.	Q
146.5	217
147.5	614
148.5	1128
149.5	1736
150.5	2426
151.17	2930
151.5	3716
152.5	8285
153.5	14801



BY D.J.M. DATE 2-79
CHKD. BY ____ DATE ____
SUBJECT ____

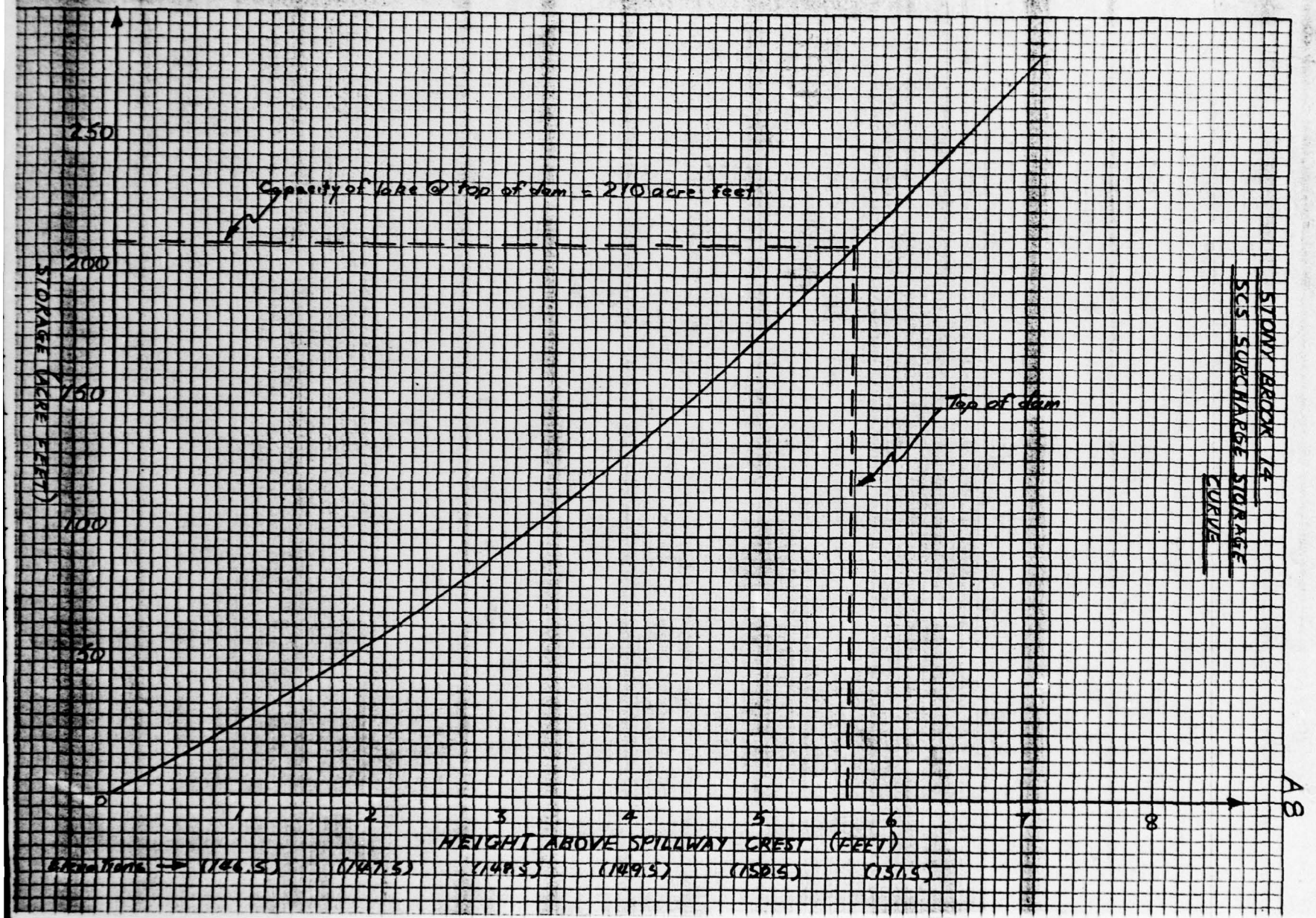
LOUIS BERGER & ASSOCIATES INC.

STONYBROOK 14 DAM INSPECTION

SHEET NO. A1 OF
PROJECT C227

SURCHARGE STORAGE DATA OBTAINED FROM S.C.S. STAGE STORAGE CURVE WHICH IS DUPLICATED OVERLEAF.

HEIGHT ABOVE SPILLWAY CREST (feet)	SURCHARGE STORAGE (ACRE FEET)	SPILLWAY DISCHARGE (cfs)
1	27	217
2	59	614
3	95	1128
4	134	1736
5	179	2426
5.67	210	2930
6	227	3716
6.5	251	5700
7	280	8285



BY LB DATE FEB '79 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A9 OF

CHKD. BY DATE STONY BROOK SITE #14 PROJECT C-227

SUBJECT DRAWDOWN COMPUTATIONS

Assuming no inflow or tailwater

	ELEV. FT.	TOTAL STORAGE ACRE-FT	Differential STORAGE ACRE-FT	DISCHARGE ACTUAL CFS	DISCHARGE AVG. CFS	AVERAGE DISCHARGE ACRE-FT/DAY	DRAWDOWN TIME DAYS
NORMAL POOL	145.5	110		62.8			
			35		60.7	120.40	.29
	144	75		58.6			
			35		55.6	110.28	.32
	142	40		52.6			
			22.5		49.1	97.39	.23
	140	17.5		45.7			
			10		41.6	82.51	.12
	138	7.5		37.5			
			6.25		32.3	64.07	.10
	136	1.25		27.1			
			.50		17.3	34.31	.01
	134	.75		17.6			
			.75		3.8	7.54	.10
	132.83	0		0			

Σ 1.17 days

Say 1 day

$Q = A\sqrt{\frac{2gH}{K_{LOSSES}}}$

$= \pi(1)^2\sqrt{\frac{64.4\,H}{1.86}}$

$= 18.4\,H^{1/2}$

$K_{LOSSES} = K_{ENTRANCE} + K_{EXIT} + K_{FRICTION} + K_{ELBOW}$

$= .5 + 1 + \frac{29.1(n)^2L}{R^{4/3}} + .25$ $n = 0.012$, $L = 12.2'$

$= 1.75 + \frac{29.1(.012)^2(12.2)}{.5^{4/3}}$ R = 2 (RADIUS)

$= 1.88$

BY DJM DATE

CHKD. BY DATE

SUBJECT

LOUIS BERGER & ASSOCIATES INC.

STONY BROOK W.S. SITE 14

SHEET NO. A-10 OF

PROJECT C-227

STONY BROOK W.S.14 DAM INSPECTION NORTH GROUP C227
BY MULDOON
FEBRUARY 1979

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
100	0	30	0	0	0	0	0	0	0

JOPER	NWT
3	0

********** *********** ********** ********* **********

SUB-AREA RUNOFF COMPUTATION

INFLOW TO RESERVOIR

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME
14	0	0	0	0	0	1

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
0	-1	3.53	0.0	3.53	0.0	0.0	0	0	0

PRECIP DATA

NP	STORM	DAJ	DAK
12	0.0	0.0	0.0

PRECIP PATTERN

0.12	0.12	0.14	0.17	0.18	0.22	0.70	2.40	0.60	0.30
0.13	0.12								

LOSS DATA

STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0.0	0.0	1.00	0.0	0.0	1.00	0.50	0.10	0.0	0.0

GIVEN UNIT GRAPH, NUMGG= 16

146.	527.	902.	927.	703.	468.	312.	205.	127.	88.
62.	40.	27.	18.	12.	8.				

UNIT GRAPH TOTALS 4578. CFS OR 1.01 INCHES OVER THE AREA

RECESSION DATA

STRTQ= 0.0 QRCSN= 0.0 RTIOR= 1.00

END-OF-PERIOD FLOW

TIME	RAIN	EXCS	COMP Q
1	0.12	0.00	0.
2	0.12	0.00	0.
3	0.14	0.00	0.
4	0.17	0.04	5.
5	0.18	0.13	38.
6	0.22	0.17	125.
7	0.70	0.65	335.
8	2.40	2.35	985.
9	0.60	0.55	2174.
10	0.30	0.25	3254.

BY. DJM DATE

CHKD. BY DATE

SUBJECT

LOUIS BERGER & ASSOCIATES INC.

STONY BROOK W.S. SITE 14

SHEET NO. A-11 OF

PROJECT C-227

11	0.13	0.08	3406.
12	0.12	0.07	2830.
13	0.0	0.0	2085.
14	0.0	0.0	1473.
15	0.0	0.0	998.
16	0.0	0.0	650.
17	0.0	0.0	437.
18	0.0	0.0	297.
19	0.0	0.0	197.
20	0.0	0.0	132.
21	0.0	0.0	87.
22	0.0	0.0	58.
23	0.0	0.0	35.
24	0.0	0.0	11.
25	0.0	0.0	4.
26	0.0	0.0	1.
27	0.0	0.0	1.
28	0.0	0.0	0.
29	0.0	0.0	0.
30	0.0	0.0	0.
31	0.0	0.0	0.
32	0.0	0.0	0.
33	0.0	0.0	0.
34	0.0	0.0	0.
35	0.0	0.0	0.
36	0.0	0.0	0.
37	0.0	0.0	0.
38	0.0	0.0	0.
39	0.0	0.0	0.
40	0.0	0.0	0.
41	0.0	0.0	0.
42	0.0	0.0	0.
43	0.0	0.0	0.
44	0.0	0.0	0.
45	0.0	0.0	0.
46	0.0	0.0	0.
47	0.0	0.0	0.
48	0.0	0.0	0.
49	0.0	0.0	0.
50	0.0	0.0	0.
51	0.0	0.0	0.
52	0.0	0.0	0.
53	0.0	0.0	0.
54	0.0	0.0	0.
55	0.0	0.0	0.
56	0.0	0.0	0.
57	0.0	0.0	0.
58	0.0	0.0	0.
59	0.0	0.0	0.
60	0.0	0.0	0.
61	0.0	0.0	0.
62	0.0	0.0	0.
63	0.0	0.0	0.
64	0.0	0.0	0.
65	0.0	0.0	0.
66	0.0	0.0	0.
67	0.0	0.0	0.
68	0.0	0.0	0.
69	0.0	0.0	0.
70	0.0	0.0	0.
71	0.0	0.0	0.

72	0.0	0.0	0.
73	0.0	0.0	0.
74	0.0	0.0	0.
75	0.0	0.0	0.
76	0.0	0.0	0.
77	0.0	0.0	0.
78	0.0	0.0	0.
79	0.0	0.0	0.
80	0.0	0.0	0.
81	0.0	0.0	0.
82	0.0	0.0	0.
83	0.0	0.0	0.
84	0.0	0.0	0.
85	0.0	0.0	0.
86	0.0	0.0	0.
87	0.0	0.0	0.
88	0.0	0.0	0.
89	0.0	0.0	0.
90	0.0	0.0	0.
91	0.0	0.0	0.
92	0.0	0.0	0.
93	0.0	0.0	0.
94	0.0	0.0	0.
95	0.0	0.0	0.
96	0.0	0.0	0.
97	0.0	0.0	0.
98	0.0	0.0	0.
99	0.0	0.0	0.
100	0.0	0.0	0.
SUM	5.20	4.29	19618.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	3406.	1577.	409.	196.	19618.
INCHES		4.16	4.31	4.31	4.31
AC-FT		782.	811.	811.	811.

* HYDROGRAPH ROUTING

ROUTING THROUGH RESERVOIR

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME
114	1	0	0	0	0	1

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME
0.0	0.0	0.0	1	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA
1	0	0	0.0	0.0	0.0	0.

STORAGE=	0.	27.	59.	95.	134.	179.	210.	227.	251.	280.
OUTFLOW=	0.	217.	614.	1128.	1736.	2426.	2930.	3716.	5700.	8285.

TIME	EOP STOR	AVG IN	EOP OUT
1	0.	0.	0.
2	0.	0.	0.
3	0.	0.	0.
4	0.	3.	1.

BY DJM DATE

CHKD. BY DATE

SUBJECT

LOUIS BERGER & ASSOCIATES INC.

STONY BROOK W.S. SITE 14

SHEET NO. A-13 OF

PROJECT C-227

5	1.	21.	7.
6	3.	81.	28.
7	11.	230.	86.
8	31.	660.	263.
9	74.	1580.	822.
10	133.	2714.	1723.
11	184.	3330.	2499.
12	203.	3118.	2810.
13	192.	2457.	2633.
14	165.	1779.	2213.
15	134.	1235.	1743.
16	106.	824.	1295.
17	82.	543.	942.
18	64.	367.	680.
19	50.	247.	497.
20	39.	164.	361.
21	30.	110.	258.
22	24.	73.	193.
23	19.	46.	151.
24	14.	23.	115.
25	10.	7.	84.
26	8.	3.	61.
27	5.	1.	44.
28	4.	0.	31.
29	3.	0.	23.
30	2.	0.	16.
31	1.	0.	12.
32	1.	0.	8.
33	1.	0.	6.
34	1.	0.	4.
35	0.	0.	3.
36	0.	0.	2.
37	0.	0.	2.
38	0.	0.	1.
39	0.	0.	1.
40	0.	0.	1.
41	0.	0.	0.
42	0.	0.	0.
43	0.	0.	0.
44	0.	0.	0.
45	0.	0.	0.
46	0.	0.	0.
47	0.	0.	0.
48	0.	0.	0.
49	0.	0.	0.
50	0.	0.	0.
51	0.	0.	0.
52	0.	0.	0.
53	0.	0.	0.
54	0.	0.	0.
55	0.	0.	0.
56	0.	0.	0.
57	0.	0.	0.
58	0.	0.	0.
59	0.	0.	0.
60	0.	0.	0.
61	0.	0.	0.
62	0.	0.	0.
63	0.	0.	0.
64	0.	0.	0.
65	0.	0.	0.

BY. DJM DATE

CHKD. BY DATE

SUBJECT

LOUIS BERGER & ASSOCIATES INC.

STONY BROOK W.S. SITE 14

SHEET NO. A14 OF

PROJECT G-227

66	0.	0.	0.
67	0.	0.	0.
68	0.	0.	0.
69	0.	0.	0.
70	0.	0.	0.
71	0.	0.	0.
72	0.	0.	0.
73	0.	0.	0.
74	0.	0.	0.
75	0.	0.	0.
76	0.	0.	0.
77	0.	0.	0.
78	0.	0.	0.
79	0.	0.	0.
80	0.	0.	0.
81	0.	0.	0.
82	0.	0.	0.
83	0.	0.	0.
84	0.	0.	0.
85	0.	0.	0.
86	0.	0.	0.
87	0.	0.	0.
88	0.	0.	0.
89	0.	0.	0.
90	0.	0.	0.
91	0.	0.	0.
92	0.	0.	0.
93	0.	0.	0.
94	0.	0.	0.
95	0.	0.	0.
96	0.	0.	0.
97	0.	0.	0.
98	0.	0.	0.
99	0.	0.	0.
100	0.	0.	0.
SUM			19618.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2810.	1518.	409.	196.	19618.
INCHES		4.00	4.31	4.31	4.31
AC-FT		753.	811.	811.	811.

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RUNOFF SUMMARY, AVERAGE FLOW

		PEAK	6-HOUR	24-HOUR	72-HOUR	AREA
HYDROGRAPH AT	14	3406.	1577.	409.	196.	3.53
ROUTED TO	114	2810.	1518.	409.	196.	3.53